BIOLOGY NMDCAT EARLIER PREP

PMC UNIT WISE TEST Unit-12

TOPIC:

✓ **Variations and Genetics / Inheritance**

Q.1 **The sequence of nucleotides that determines the amino acid sequence of a protein is called:**
A. Gamete
B. Chromatid
C. Chromosome
D. Gene

Q.2 **All the genes found in a breeding population at a given time are collectively termed as:**
A. Gene frequency
B. Gene cluster
C. Gene operon
D. Gene pool

Q.3 **It is the genetic compliment for a particular trait in an individual:**
A. Genotype
B. Phenotype
C. Genome
D. Karyotype

Q.4 **Organism of pure line is that which produces individuals of**
A. Dominant characters
B. Its own character type
C. Recessive characters
D. Intermediate type

Q.5 **The organism chosen by G. Mendel to explain the laws of inheritance was:**
A. *Homo sapiens*
B. *Arabidopsis thaliana*
C. *Pisum sativum*
D. *Drosophila melanogester*

Q.6 **All of the following are recessive phenotypes found in Mendelian experimental plant except:**
A. Constricted pod shape
B. Wrinkled seed shape
C. Green pod color
D. Short plant height

Q.7 **In Mendel's monohybrid cross, short stem trait becomes recessive in F_1 generation. It will express in F_2 generation only when/in:**
A. Alleles expresses co-dominantly
B. Alleles expresses via incomplete dominance
C. Homozygous recessive condition
D. Homozygous dominant condition

Q.8 **Mendel's law of segregation was based on the separation of alleles in the garden pea during:**
A. Pollination
B. Seed formation
C. Embryonic development
D. Gamete formation

Q.9 **Depict the genotypic ratio of the cross between 'Tt × Tt' plants:**
A. 3: 1
B. 1:3:3:9
C. 1: 2: 1
D. 9:3:3:1

Q.10 **Keeping in view the Mendel's law of segregation, if tall plants were crossed with short heighted plants, then which of the following best describe the F_1 progeny?**
A. Homozygous and tall heighted
B. Heterozygous and tall heighted
C. Homozygous and short heighted
D. Heterozygous and short heighted

Q.11 **A test cross is best described by:**
A. TT × Tt
B. TT × tt
C. tt × tt
D. Tt × Tt

Q.12 **Mendel's law of independent assortment is not obeyed by:**
A. Dominant genes
B. Mutant genes
C. Recessive genes
D. Linked genes

Q.13 In Mendelian dihybrid cross, how many individuals are homozygous recessive for both traits in F_2 generation?

A. 1/16 B. 4/16
C. 2/16 D. 6/16

Q.14 It is the chance of an event to occur:

A. Product rule B. Summation rule
C. Division rule D. Probability

Q.15 With a genotype AaBb, the fraction of gametes that will contain 'ab' alleles is:

A. 1/16 B. 1/4
C. 1/2 D. 3/4

Q.16 When two independent events are occurring simultaneously like in dihybrid cross, the ratio of each joint phenotypic combination can be obtained by:

A. Adding the probabilities of individual phenotypes
B. Multiplying the probabilities of individual phenotypes
C. Dividing the probabilities of individual phenotypes
D. Subtracting the probabilities of individual phenotypes

Q.17 When a single gene affects two or more traits, this phenomenon is termed as:

A. Epistasis B. Gene linkage
C. Pleiotropy D. Multi-allelic inheritance

Q.18 When the phenotype of the heterozygote is intermediate between phenotypes of the two parental homozygote, then this relation is termed as:

A. Complete dominance B. Incomplete dominance
C. Co-dominance D. Over dominance

Q.19 Which one might be the blood group of an individual with the following genetic makeup?
"L^ML^N, I^Ai, Dd, hh"

A. Phenotypically MN, A and Rh positive B. Phenotypically MN, A and Rh negative
C. Phenotypically MN, O and Rh positive D. Phenotypically MN, O and Rh negative

Q.20 Which of the following blood groups in humans is an example of co-dominance?

A. A B. B
C. AB D. O

Q.21 If a child has O type of blood group and the father has B type, then the genotype of the father will be

A. ii B. I^Bi
C. I^AI^B D. I^BI^B

Q.22 ABO blood groups in humans are best studied example of multiple allelism and are controlled by the polymorphic gene 'I', which has three alleles '$I^{A'}$, '$I^{B'}$ and 'i'. Since there are different alleles, six different genotypes are possible. How many phenotypes can occur?

A. One B. Two
C. Three D. Four

Q.23 All of the following are correct regarding 'Rh' blood group system except:

A. Quantitative expression of Rh-factor B. Occupy two tightly linked loci
C. Three genes e.g. C, D and E D. Rh factor present on RBCs

Q.24 Erythroblastosis foetalis can be caused when:

A. A^- male marries B^+ female C. A^+ male marries B^+ female
B. AB^- male marries B^- female D. O^+ male marries B^- female

Q.25 How many alleles of ABO blood group are present in an individual?

A. 1 B. 2
C. 3 D. 300

Q.26 Bombay phenotype is an example of:

A. Dominance B. Epistasis
C. Pleiotropy D. Polygenic inheritance

Q.27 In Bombay phenotype, ABO locus is on chromosome 9 while locus for 'H' gene is on chromosome:

A. 9 B. 19
C. 11 D. X

Q.28 Dominance is physiological effect of an allele over its partner allele occupying:

A. Same locus on same chromosome B. Same locus on respective homologue
C. Different locus on same chromosome D. Different locus on respective homologue

Q.29 During meiosis, crossing over occur between:
A. Sister chromatids of homologous chromosomes
B. Sister chromatids of non-homologous chromosomes
C. Non- sister chromatids of homologous chromosomes
D. Non-homologous chromatids of homologous chromosomes

Q.30 Crossing over is:
A. Important in genetic recombination
B. What makes a cell become cancerous
C. A process that occur during mitosis
D. An important mechanism of DNA repair

Q.31 Crossing over in diploid organism is responsible for:
A. Dominance of genes
B. Segregation of alleles
C. Linkage between genes
D. Recombination of linked allele

Q.32 The recombination frequency is directly proportional to the:
A. No. of tetrads formed
B. Distance between the linked gene loci
C. Number of times a cell divides
D. Total number of genes of an individual

Q.33 In humans, sex of an individual depends upon:
A. Homogametic mother
B. Homogametic father
C. Heterogametic mother
D. Heterogametic father

Q.34 Human skin color is a good example of:
A. Sex linked inheritance
B. X-linked inheritance
C. Polygenic inheritance
D. Y-linked inheritance

Q.35 _____ form one linkage group on human chromosome 11.
A. Colour blindness, gout and albinism
B. Sickle cell anemia, leukemia and albinism
C. Colour blindness, hemophilia and gout
D. Sickle cell anemia, albinism and hemophilia

Q.36 How many linkage groups are present in humans?
A. 92
B. 23
C. 46
D. 9

Q.37 Which of the following is X-linked dominant trait in humans?
A. Hemophilia A
B. Red-green color blindness
C. Vitamin D resistant rickets
D. Testicular feminization syndrome

Q.38 This is not true about testicular feminization syndrome:
A. It is androgen insensitivity syndrome
B. Having blind vagina but no uterus
C. Individuals are females in appearance
D. Degenerated testes are present in scrotum

Q.39 If male is an affected case of hypophosphatemic rickets and female is normal, then chances of this trait in their offspring will be as under:
A. All daughters will be affected
B. 50% daughters will be affected
C. All sons will be affected
D. 50% sons will be affected

Q.40 After an injury, haemophiliac's blood fails to clot properly because it may have:
A. Reduction in blood clotting factors
B. Absence of blood clotting factors
C. Malfunctioning of blood clotting factors
D. All A, B, C

Q.41 Haemophilia 'A' occurs due to disturbance in _____ while haemophilia 'B' occurs due to disturbance in _____, respectively.
A. Factor, IX, factor X
B. Factor XI, factor VIII
C. Factor VIII, factor IX
D. Factor IX, factor XI

Q.42 If a carrier woman for haemophilia is married to a normal man, then all of the following combinations can exist except:
A. X^HX^H
B. X^hY
C. X^HY
D. X^hX^h

Q.43 Each type of cone cell has specific light absorbing proteins called:
A. Rhodopsin
B. Porphyrin
C. Opsins
D. Retinol

Q.44 **If a female is colour blind having genetic combination X^cX^c, then the possible combination of her parents should be:**

A. X^CX^C, X^CY B. X^CX^c, X^cY
C. X^CX^C, X^cY D. X^CX^c, X^CY

Q.45 **A dichromate is unable to perceive:**

A. One primary colour B. Two primary colours
C. Three primary colours D. All the colours

Q.46 **Women with normal colour vision whose father was red-green colour blind married a red-green colour blind man. What is the probability of her first born child being red-green colour blind?**

A. 1.0 B. 0.66
C. 0.75 D. 0.50

Q.47 **A boy receives his X-chromosome from:**

A. His mother only B. His father only
C. Both father and mother D. Either father or mother

Q.48 **The genes of which of the following proteins are present on autosomes?**

A. Red opsin and clotting factor VIII B. Green opsin and clotting factor IX
C. Blue opsin and clotting factor XI D. Blue opsin and clotting factor VIII

Q.49 **_____ may produce many different alleles of a gene.**

A. Gene mutation B. Gene transcription
C. Gene expression D. Gene interference

Q.50 **The method for analyzing inheritance pattern of traits in human being is:**

A. DNA fingerprinting B. Pedigree analysis
C. Control crosses D. Karyotyping

Biology Test 12 Key

1) D
2) D
3) A
4) B
5) C
6) C
7) C
8) D
9) C
10) B
11) B
12) D
13) A
14) D
15) B
16) B
17) C
18) B
19) C
20) C
21) B
22) D
23) A
24) D
25) B
26) B
27) B
28) B
29) C
30) A
31) D
32) B
33) D
34) C
35) B
36) B
37) C
38) D
39) A
40) D
41) C
42) D
43) C
44) B
45) A
46) D
47) A
48) C
49) A
50) B

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